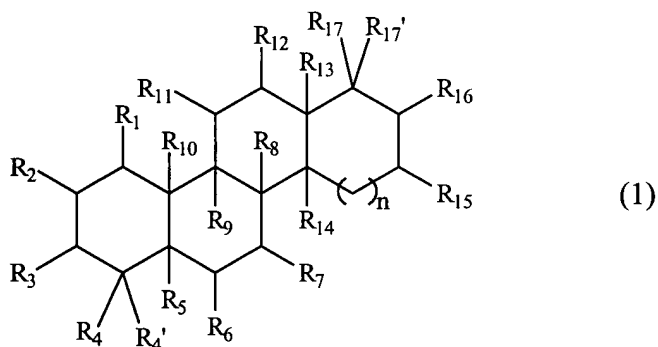


Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A compound of formula (1):



wherein

each of R<sub>1</sub>, R<sub>2</sub>, R<sub>7</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>15</sub>, and R<sub>16</sub>, independently, is hydrogen, hydroxy, amino, carboxyl, oxo, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid;

R<sub>4</sub> is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid; or R<sub>4</sub> together with R<sub>4</sub>' is oxo;

R<sub>4</sub>' is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -

N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid; or R<sub>4</sub>' together with R<sub>4</sub> is oxo;  
each of R<sub>17</sub>, and R<sub>17</sub>', independently, is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid;  
R<sub>3</sub> is X-Y-, wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-;  
R<sub>5</sub> and R<sub>6</sub>, together, are -O-; or R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo;  
each of R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>13</sub>, and R<sub>14</sub>, independently, is hydrogen, alkyl, haloalkyl, hydroxyalkyl, alkoxy, hydroxy, or amino; ~~and~~  
n is 0, 1, or 2; and provided that when R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>, R<sup>4</sup>', R<sup>8</sup>, R<sup>9</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, and R<sup>17</sup> are hydrogen; R<sup>10</sup> and R<sup>13</sup> are CH<sub>3</sub>; R<sup>5</sup> and R<sup>6</sup> together are a double bond between C-5 and C-6; R<sup>7</sup> is hydrogen or oxo; R<sup>17</sup> is CH<sub>3</sub>CH(CH<sub>2</sub>)<sub>3</sub>CH(CH<sub>3</sub>)<sub>2</sub>; and n is 0, then R<sup>3</sup> is (CH<sub>3</sub>CH<sub>2</sub>)<sub>3</sub>HN<sup>(+)(-)</sup>OSO<sub>2</sub>O- or X-Y- wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -CO-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

2. (Original) The compound of claim 1, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

3. (Withdrawn) The compound of claim 1, wherein R<sub>5</sub> and R<sub>6</sub>, together, are -O-.

4. (Withdrawn) The compound of claim 3, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

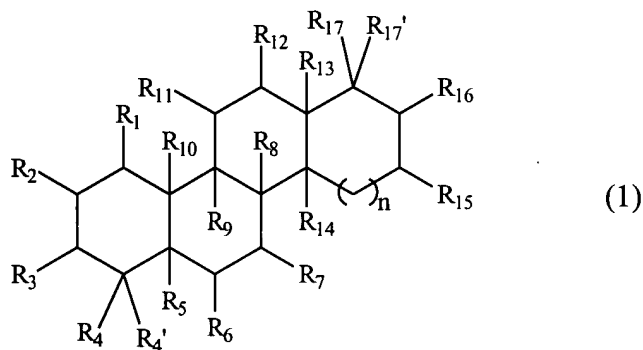
5. (Withdrawn) The compound of claim 4, wherein X is hydrogen, and Y is -SO<sub>3</sub>.
6. (Withdrawn) The compound of claim 3, wherein -O- is on the  $\alpha$  side of C-5 and C-6.
7. (Withdrawn) The compound of claim 6, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.
8. (Withdrawn) The compound of claim 7, wherein X is hydrogen, and Y is -SO<sub>3</sub>.
9. (Withdrawn) The compound of claim 8, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen; and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17'</sub>, independently, is alkyl.
10. (Withdrawn) The compound of claim 9, wherein the compound is 5 $\alpha$ , 6 $\alpha$ -epoxycholesterol-3-sulfate.
11. (Withdrawn) An antibody which is specifically against the compound of claim 10.
12. (Original) The compound of claim 1, wherein R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo.
13. (Original) The compound of claim 12, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.
14. (Original) The compound of claim 13, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

15. (Original) The compound of claim 14, wherein  $R_1$ ,  $R_2$ ,  $R_4$ ,  $R_4'$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{11}$ ,  $R_{12}$ ,  $R_{14}$ ,  $R_{15}$ ,  $R_{16}$ , and  $R_{17}$  are hydrogen; and each of  $R_{10}$ ,  $R_{13}$ , and  $R_{17}'$ , independently, is alkyl.

16. (Cancelled)

17. (Withdrawn) An antibody which is specifically against the compound of claim 16.

18. (Withdrawn) A method of treating hypocholesterolemia, comprising administering to a subject in need thereof an effective amount of a compound of formula (1):



wherein

each of  $R_1$ ,  $R_2$ ,  $R_4$ ,  $R_4'$ ,  $R_7$ ,  $R_{11}$ ,  $R_{12}$ ,  $R_{15}$ ,  $R_{16}$ ,  $R_{17}$ , and  $R_{17}'$ , independently, is hydrogen, hydroxy, amino, carboxyl, oxo, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -O-, -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid;  $R_3$  is X-Y-, wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-;

$R_5$  and  $R_6$ , together, are -O-; or  $R_5$  and  $R_6$ , together, are a double bond between C-5 and C-6, and  $R_7$  is oxo;

each of  $R_8$ ,  $R_9$ ,  $R_{10}$ ,  $R_{13}$ , and  $R_{14}$ , independently, is hydrogen, alkyl, haloalkyl, hydroxyalkyl, alkoxy, hydroxy, or amino; and

n is 0, 1, or 2.

1

19. (Withdrawn) The method of claim 18, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

20. (Withdrawn) The method of claim 18, wherein R<sub>5</sub> and R<sub>6</sub>, together, are -O-.

21. (Withdrawn) The method of claim 20, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

22. (Withdrawn) The method of claim 21, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

23. (Withdrawn) The method of claim 20, wherein -O- is on the  $\alpha$  side of C-5 and C-6.

24. (Withdrawn) The method of claim 23, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

25. (Withdrawn) The method of claim 24, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

26. (Withdrawn) The method of claim 25, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen, and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17'</sub>, independently, is alkyl.

27. (Withdrawn) The method of claim 26, wherein the compound is 5 $\alpha$ , 6 $\alpha$ -epoxycholesterol-3-sulfate.

28. (Withdrawn) The method of claim 18, wherein  $R_5$  and  $R_6$ , together, are a double bond between C-5 and C-6, and  $R_7$  is oxo.

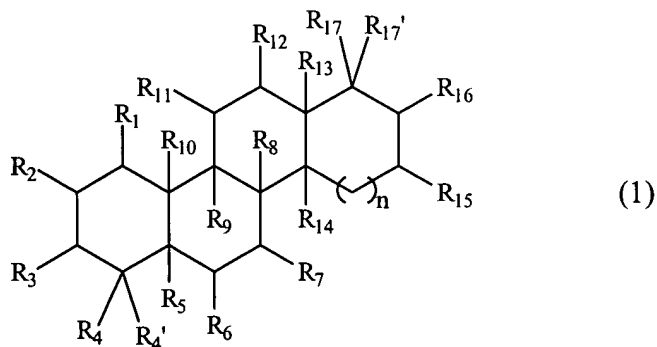
29. (Withdrawn) The method of claim 28, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

30. (Withdrawn) The method of claim 29, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

31. (Withdrawn) The method of claim 30, wherein  $R_1$ ,  $R_2$ ,  $R_4$ ,  $R_4'$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{11}$ ,  $R_{12}$ ,  $R_{14}$ ,  $R_{15}$ ,  $R_{16}$ , and  $R_{17}$  are hydrogen, and each of  $R_{10}$ ,  $R_{13}$ , and  $R_{17}'$ , independently, is alkyl.

32. (Withdrawn) The method of claim 31, wherein the compound is 7-keto-cholesterol-3-sulfate.

33. (Currently amended) A pharmaceutical composition comprising a compound of formula (1):



wherein:

each of  $R_1$ ,  $R_2$ ,  $R_7$ ,  $R_{11}$ ,  $R_{12}$ ,  $R_{15}$ , and  $R_{16}$ , independently, is hydrogen, hydroxy, amino, carboxyl, oxo, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid;

R<sub>4</sub> is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid; or R<sub>4</sub> together with R<sub>4</sub>' is oxo;

R<sub>4</sub>' is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid; or R<sub>4</sub>' together with R<sub>4</sub> is oxo;

each of R<sub>17</sub>, and R<sub>17</sub>', independently, is hydrogen, hydroxy, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -NH-, -N(alkyl)-, -O-, -S-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid;

R<sub>3</sub> is X-Y-, wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-;

R<sub>5</sub> and R<sub>6</sub>, together, are -O-; or R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo;

each of R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>13</sub>, and R<sub>14</sub>, independently, is hydrogen, alkyl, haloalkyl, hydroxyalkyl, alkoxy, hydroxy, or amino; ~~and~~

n is 0, 1, or 2; provided that when R<sup>1</sup>, R<sup>2</sup>, R<sup>4</sup>, R<sup>4</sup>', R<sup>8</sup>, R<sup>9</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, and R<sup>17</sup> are hydrogen; R<sup>10</sup> and R<sup>13</sup> are CH<sub>3</sub>; R<sup>5</sup> and R<sup>6</sup> together are a double bond between C-5 and C-6; R<sup>7</sup> is hydrogen or oxo; R<sup>17</sup>' is CH<sub>3</sub>CH(CH<sub>2</sub>)<sub>3</sub>CH(CH<sub>3</sub>)<sub>2</sub>; and n is 0, then R<sup>3</sup> is (CH<sub>3</sub>CH<sub>2</sub>)<sub>3</sub>HN<sup>(+)(-)</sup>OSO<sub>2</sub>O- or X-Y- wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -CO-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-;  
and a pharmaceutically acceptable carrier.

34. (Original) The composition of claim 33, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

35. (Withdrawn) The composition of claim 33, wherein R<sub>5</sub> and R<sub>6</sub>, together, are -O-.

36. (Withdrawn) The composition of claim 35, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

37. (Withdrawn) The composition of claim 36, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

38. (Withdrawn) The composition of claim 35, wherein -O- is on the  $\alpha$  side of C-5 and C-6.

39. (Withdrawn) The composition of claim 38, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

40. (Withdrawn) The composition of claim 39, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

41. (Withdrawn) The composition of claim 40, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4</sub>', R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen, and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17</sub>', independently, is alkyl.



42. (Withdrawn) The composition of claim 41, wherein the compound is 5 $\alpha$ , 6 $\alpha$ -epoxycholesterol-3-sulfate.

43. (Original) The composition of claim 33, wherein R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo.

44. (Original) The composition of claim 33, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

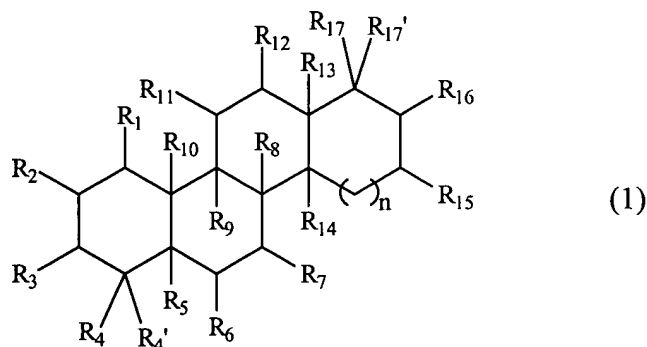
45. (Original) The composition of claim 44, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

46. (Original) The composition of claim 45, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen, and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17'</sub>, independently, is alkyl.

47. (Cancelled)

48. (Withdrawn) A method of evaluating a compound for its agonistic effect on an liver X receptor, comprising:

contacting the compound to be evaluated with the liver X receptor in the presence of a compound of formula (1):



wherein

each of R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>15</sub>, R<sub>16</sub>, R<sub>17</sub>, and R<sub>17'</sub>, independently, is hydrogen, hydroxy, amino, carboxyl, oxo, halo, sulfonic acid, -O-sulfonic acid, or alkyl that is optionally inserted with -O-, -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-, and further optionally substituted with hydroxy, halo, amino, carboxyl, sulfonic acid, or -O-sulfonic acid; R<sub>3</sub> is X-Y-, wherein X is hydrogen, amino, carboxyl, halo, sulfonic acid, -O-sulfonic acid, or alkyl; Y is -S-, -NH-, -N(alkyl)-, -SO-, -SO<sub>2</sub>-, -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-; R<sub>5</sub> and R<sub>6</sub>, together, are -O-; or R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo; each of R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>13</sub>, and R<sub>14</sub>, independently, is hydrogen, alkyl, haloalkyl, hydroxyalkyl, alkoxy, hydroxy, or amino; and n is 0, 1, or 2; and

assessing the agonistic effect of the compound to be evaluated on the liver X receptor.

49. (Withdrawn) The method of claim 48, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

50. (Withdrawn) The method of claim 48, wherein R<sub>5</sub> and R<sub>6</sub>, together, are -O-.

51. (Withdrawn) The method of claim 50, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

52. (Withdrawn) The method of claim 51, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

53. (Withdrawn) The method of claim 50, wherein -O- is on the  $\alpha$  side of C-5 and C-6.

54. (Withdrawn) The method of claim 51, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

55. (Withdrawn) The method of claim 54, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

56. (Withdrawn) The method of claim 55, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen, and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17'</sub>, independently, is alkyl.

57. (Withdrawn) The method of claim 56, wherein the compound is 5 $\alpha$ , 6 $\alpha$ -epoxycholesterol-3-sulfate.

58. (Withdrawn) The method of claim 48, wherein R<sub>5</sub> and R<sub>6</sub>, together, are a double bond between C-5 and C-6, and R<sub>7</sub> is oxo.

59. (Withdrawn) The method of claim 48, wherein X is hydrogen or amino, and Y is -O-SO<sub>2</sub>-, -SO<sub>2</sub>-O-, -SO<sub>3</sub>-O-, -CO-, -CO-O-, -O-CO-, -CO-NH-, -CO-N(alkyl)-, -NH-CO-, or -N(alkyl)-CO-.

60. (Withdrawn) The method of claim 59, wherein X is hydrogen, and Y is -SO<sub>3</sub>-O-.

61. (Withdrawn) The method of claim 60, wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>4</sub>, R<sub>4'</sub>, R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, and R<sub>17</sub> are hydrogen, and each of R<sub>10</sub>, R<sub>13</sub>, and R<sub>17'</sub>, independently, is alkyl.

62. (Withdrawn) The method of claim 61, wherein the compound is 7-keto-cholesterol-3-sulfate.